

Sample Exam 3.

Open book, open notes, no cooperation, no calculators.

1. Find the Laplace transform of $t \sin 2t$.
2. Find the inverse Laplace transform of $\frac{s-1}{s^2+4s+5}$.
3. Solve the initial value problem $y''+5y'+6y = u(t-2)$, $y(0) = 0$, $y'(0) = -1$ using the Laplace transform method.
4. Use the convolution method to find the inverse Laplace transform of $\frac{1}{s(s^2+1)}$.
5. Find a solution to the formal initial value problem $y'' + y = \delta(t - \pi)$, $y(0) = y'(0) = 0$.